ESTIMATING THE CUSTOMER BENEFIT OF INDEXING THE RfR

Analysis for Northumbrian Water

Legally privileged and commercially confidential | 25 August 2023

Economic Insight

This note sets out our estimate of the benefit to NWL's customers (in £m) of the company indexing the risk-free rate (RfR) in its PR24 Business Plan. Our analysis suggests that, were the RfR to fall by 1.79 percentage points over the PR24 period: (i) under an indexation approach to the RfR, the wholesale vanilla weighted-average cost of capital (WACC) would reduce from 3.88% (using our understanding of NWL's latest position on the WACC) to 3.59% by the end of PR24 (real, CPIH); and (ii) indexing the RfR would therefore save NWL's customers around £92m over the PR24 period.

1 Introduction

Northumbrian Water Limited (NWL) intends to adopt indexation of the RfR in its PR24 Business Plan. There is a sound basis for this, as the RfR is outside of efficient management control, meaning risk in it varying should not be allocated to companies. In addition, given the recent increases in interest rates in the UK, should rates begin to fall, there may further be a specific benefit to customers of indexing the RfR at PR24, as it would mean bills would be lower, relative to retaining a 'fixed' RfR at the next price control. Accordingly, NWL has asked us to undertake an analysis of the £m benefits to its customers of it proposing an indexation approach within its Plan. This note sets out our quantification and describes our methodology for you.

In reviewing our estimates and method, we highlight that, whilst forward curves do imply a reduction in the RfR (as implied by yields on ILGs and AAA corporate bonds), there is considerable uncertainty in the UK economy at this time. Specifically, Bank of England base rates, and bond yields, remain low by long-term historical standards. We do not think this undermines the appropriateness of estimating potential customer benefits based on forward-curves (as those, by definition, reflect current investor expectations). However, it is important to be aware of this limitation. Moreover, in our view, the main argument in favour of RfR indexation is the principle of 'risk allocation', as noted above, which points to indexation being in the long-term interests of customers (rather than the question of whether customers might benefit from lower bills under indexation, over a specific period of time).

2 WACC

This section presents our approach to estimating the potential reduction in the WACC that would arise over PR24, were the RfR to be indexed. Throughout this note, when referring to the WACC, we employ the wholesale vanilla WACC (real, CPIH). We use the wholesale, rather than appointee, WACC in this analysis, as this excludes the retail margin (which will not vary with the RfR method).

To estimate customer benefits in £m terms, it is necessary to make an assumption about what the WACC will be at the start of PR24. NWL has advised us of its latest position as to the WACC, which we have used in our analysis. The specific values we have used are shown in the table overleaf, which we find implies a WACC of 3.88% (which we take as applying at the start of PR24). It is important to note that the starting level of the WACC would be the same under a fixed and indexed RfR; and that customer benefits of moving to indexation therefore *only begin to accrue from the start of PR24.*

Table 1: WACC at the start of PR24

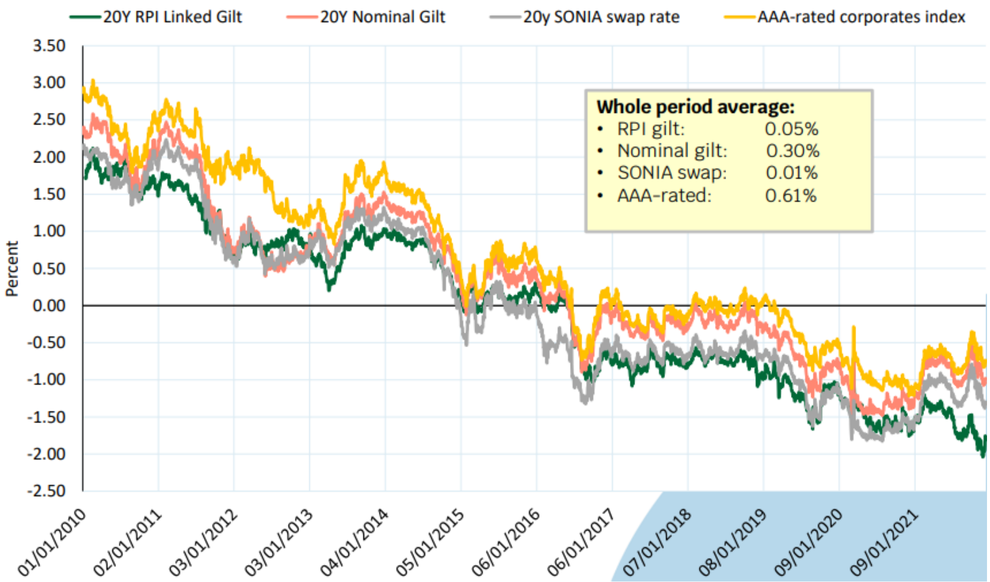
Parameter	Calculation	NWL latest position
Inflation (CPIH)	A	2.00%
Real risk-free rate	B	1.99%
Nominal risk-free rate	C = ((1+A)*(1+B))-1	4.03%
TMR	D	6.80%
Equity risk premium	E = D-B	4.81%
Enterprise value gearing	F	54.20%
Unlevered beta	G	0.290
Debt beta	H	0.075
Asset beta (PR19 basis)	I = H*F+G	0.331
Notional gearing	J	55.00%
Notional equity	K = 1-J	45.00%
Re-levered beta	L	0.643
Aiming up % points	M	0.25%
Cost of equity (real, post tax)	**N = (B+E*L)*M**	**5.33%**
Cost of embedded debt (real)	O	2.34%
Proportion of embedded debt	P	83.00%
Cost of new debt (real)	Q	3.82%
Proportion of new debt	R = 1-P	17.00%
Overall cost of debt (real)	S = ((O*P)+(Q*R))/1	2.59%
Issuance and liquidity cost allowance	T	0.10%
Overall cost of debt (real, pre tax)	**U = S+T**	**2.69%**
Appointee WACC (vanilla)	V = ((N*K)+(U*J))/(J+K)	3.88%
Retail margin deduction	W	0.00%
Wholesale WACC	**X = V-W**	**3.88%**

Source: NWL WACC and Economic Insight analysis

To estimate the indexed-RfR WACC moving forward from the above starting point, we replace NWL's proposed RfR (calculation step B in Table 1) with estimates of the indexed RfR over PR24. Specifically:

- Our estimates of the RfR are based on the latest (July 2023) RPI-linked ILG forward curves published by the Bank of England.[1]
- We note that NWL's estimated RfR reflects yields on both ILGs and AAA corporate bonds (which we agree with). However, for the purpose of estimating the customer benefits of moving to indexation (which is driven by the *expected rate of change* in yields), we have only relied upon the Bank of England ILG forward curves, rather than an average of ILG and AAA forward curves.[2] This is because, having examined the yields on both, we find them to be highly correlated (as shown in Figure 1). As the forward curves just give a 'rate of change' that we apply to the start point, this will not materially impact any estimated customer benefits in £m terms.

Figure 1: Yields on corporate bonds and ILGs (20 year maturities), 2010 to 2022



Source: 'PR24 Risk and return workshop.' Ofwat (January 2022).

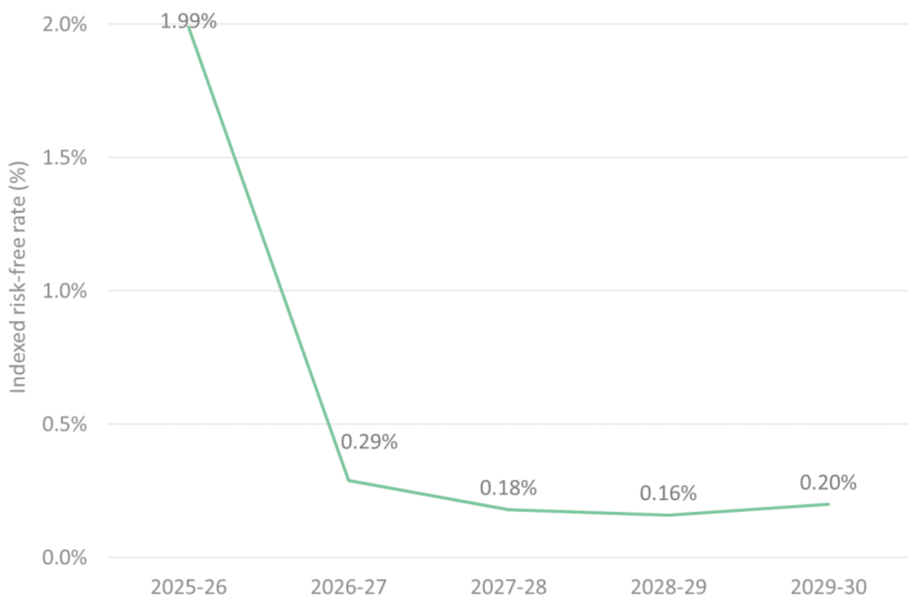
- Finally, we anchor the first year of the PR24 period (2025-26), such that the indexed RfR is equal to the fixed RfR (1.99% - i.e. using NWL's estimate as in Table 1).

Following from the above steps, our estimates of the indexed RfR over PR24 are presented in Figure 2. As can be seen, there is a relatively large drop in the indexed risk-free rate in 2026-27, which is partly due to anchoring the first year of the PR24 period.

[1] *Bank of England yield curves data (July 2023).*

[2] *The KPMG RfR figure used to anchor the first year of PR24 (1.63% in 2025-26) is based on both ILGs and AAA bonds. The subsequent years of PR24 in our analysis are based solely on ILGs.*

Figure 2: Indexed RfR over PR24



Source: Economic Insight analysis.

Following from the above, Figure 3 presents the WACC that would apply under a fixed-RfR approach, and under an indexed-RfR approach, over the course of PR24. Our analysis suggests that, under an indexation approach to the RfR, were the RfR to fall by 1.79 percentage points over the PR24 period (as inferred from the BofE forward curves), the wholesale vanilla WACC, using NWL's latest position and method, (real, CPIH) would reduce from 3.88%[3] in 2025-26 (start of PR24 period) to 3.59% in 2029-30 (end of PR24 period).

[3] *As explained above, this estimate is based on NWL's finalised position on the WACC.*

Figure 3: Fixed-RfR WACC and indexed-RfR WACC, over PR24

Source: Economic Insight analysis.

3 Customer benefit

This section sets out our approach to estimating the benefit to NWL's customers of indexing the RfR, relative to a fixed RfR.

We estimate the customer benefit from indexation in two ways.

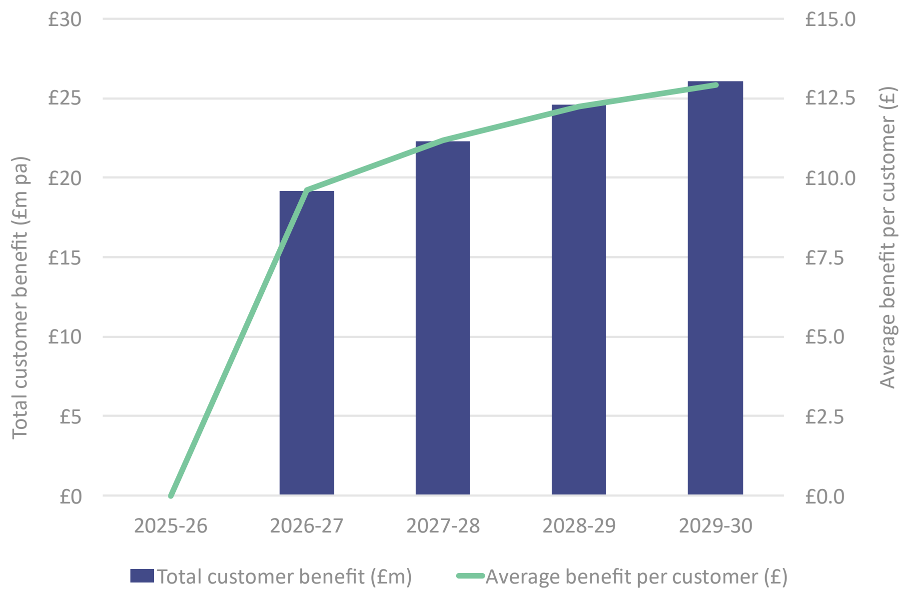
- **Total customer benefit**. We estimate the total £m savings to customers in each year, by multiplying the implied reduction in the WACC relative to a fixed RfR (i.e. the difference between the fixed-RfR WACC and indexed-RfR WACC in each year), by Northumbrian's projected RCV figures for the PR24 period.[4]

- **Average benefit per customer.** We estimate the average £s saving per customer in each year by dividing the above, by Northumbrian's projected customer numbers for the PR24 period.[5]

Figure 4 presents the total customer benefit (and average benefit per customer) of indexing the RfR over the PR24 period; and Figure 5 presents the cumulative total customer benefit and cumulative average benefit per customer of indexing the RfR over this period. As can be seen, were the RfR to fall by 1.79 percentage points over the PR24 period, the cumulative customer benefit over PR24 from indexation is estimated to be £92m, saving customers approximately £46 in bills over the whole period.

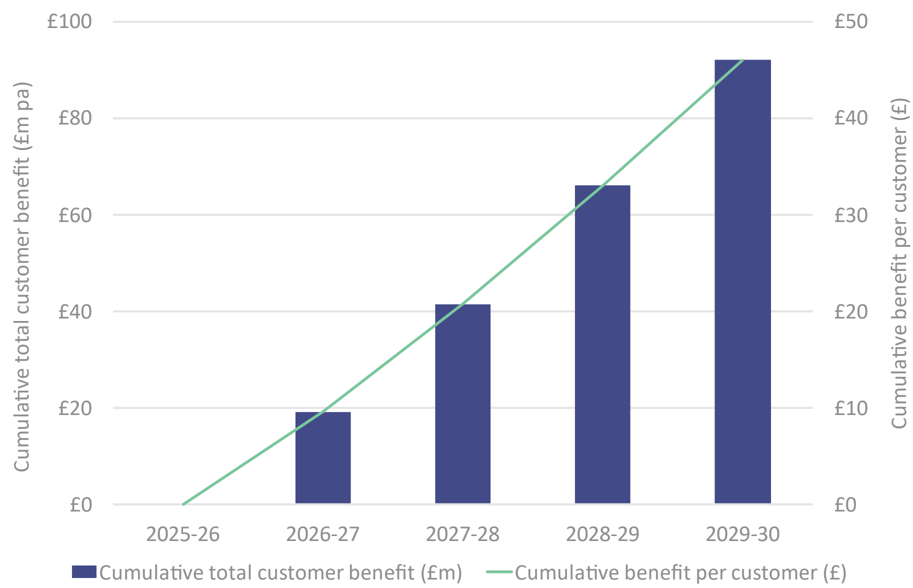
4 *This is sourced from NWL's PR24 Business Plan.*
5 *This is sourced from NWL's PR24 Business Plan.*

Figure 4: Annual customer benefit of indexing the RfR over PR24



Source: Economic Insight analysis.

Figure 5: Cumulative customer benefit of indexing the RfR over PR24



Source: Economic Insight analysis.